BUREAU OF ENVIRONMENT

CONFERENCE REPORT

DATE OF CONFERENCES: April 13, 2006

LOCATION OF CONFERENCES: J.O. Morton Building

ATTENDED BY: Marc Laurin, Cathy Goodmen, Christine Perron, Jon Evans, Kevin Nyhan, Charles Hood, Chris Waszczuk, Phil Miles, Kit Morgan, Nancy Mayville, NHDOT; Jim Garvin, Linda Wilson, Emily Paulus, Beth Muzzey, and Edna Feighner, NHDHR; Harry Kinter and Ed Woolford, FHWA; Phil McDonald, Underwood Engineering; Dorothy Duffy, Lakeport Community Association; Lynne Monroe and Carol Hooper, Preservation Co.; Ron Joy, McFarland Johnson; Deb Loiselle, DES; Bill Barry, VHB; Michael Croteau, SEA; Tom Levins, Holden Engineering; Amy Dixon and Jason Gallant, Louis Berger; Bob Sporel, DRED; Phil Faulkner, City of Keene; Mike Johnson, Maine Historical Commission (via phone); Addie Kim and John Watters, HNTB; Richard Candee, Portsmouth Historical Society;

***SUBJECT**: Monthly SHPO-FHWA-ACOE-NHDOT Cultural Resources Meeting*

Thursday, April 13, 2006

Portsmouth, BHF-X-T-0101(015), 13678: Participants: Kevin Nyhan; Addie Kim and John Watters, HNTB; Mike Johnson, Maine Historic Commission, and Nancy Mayville.

The purpose of this meeting was to present the preferred alternative for the Memorial Bridge project and to the review the cultural resource effects of the alternatives on the National Register-eligible Memorial Bridge Historic District.

Nancy Mayville provided an overview of the project and indicated that coordination with NHDOT and MEDOT March 29th was undertaken to determine the preferred alternative. NHDOT and MEDOT have determined that the preferred alternative will involve replacement of the lift span of the Memorial Bridge, rather than lift span rehabilitation. The partial closure, involving a 5-month closure of the bridge, has been chosen as the preferred construction phasing option. Nancy Mayville indicated that, as a result of input obtained from the April 6, 2006 public meeting, consideration is also being given to the widening of the sidewalks.

John Watters described the proposed project, which will include rehabilitation of the flanking trusses, the lift span replacement, and replacement of the Scott Avenue Bridge. He indicated that the new lift span would be constructed of rolled, or I-beam, steel shapes that would not be built up and riveted. Upper and lower chords sections will be smooth, bolted rolled sections, with steel cover plates, and the connections would be gussetted, with bolts and nuts. The general configuration of the bridge would remain the same, a warren truss, and vertical members would be 30 feet on center. The visual appearance of the steel would be smoother than the existing structure, but from a distance of 500 to 1,000 feet (from the water or from the Kittery/Portsmouth shorelines), this difference may not readily be discernible. The physical housing for the machinery for the span drive will be the same, although the new machine house will have an improved appearance.

The operator's house would be used to allow remote control operation from the south tower. The housing would preferably be transparent to allow increased visibility, with a railing 360 degrees around. Architectural details have not been decided, but the SHPOs will be consulted on development of these. A 25-foot stair access to the operator's house is shown on the renderings, similar to the existing operator's house and would meet building code. Secure gates would be installed at the stairs.

John Watters indicated that the existing steel framing on the lift span has pack rust corrosion on multiple members. The bottom part of the lift span under the deck has built up lacing, and many areas of this have been replaced. A lower cost of maintenance would be associated with the new lift span constructed with rolled members with cut steel plates. Fewer of the members would be subject to corrosion, as the members would not be "built up" and there would be less opportunity for water to infiltrate between plates of steel. The marine

environment and road salt has contributed to significant corrosion on the bridge that has resulted in several hundred thousand dollars worth of emergency repairs to the steel framing. The new lift span would have gusset plates with bolted connection. The new railings on the lift span would mimic the appearance of the existing railings. The existing towers flanking the lift span would be strengthened, and the appearance would remain the same. The strengthening of the towers would involve adding steel plates, but they would be hard to see and would be concealed with paint. The counterweight of the bridge would be larger to offset the increased load of the lift span, but John Watters indicated that this would involve adding about 1 foot of concrete and steel to the sides and would not involve a large visual difference. John Watters indicated that the entire bridge would be painted.

Tom Jamieson inquired about signage on the bridge. Nancy Mayville indicated that a dialogue regarding signage will be undertaken with pedestrian/bicycle groups in Portsmouth and Kittery. She indicated that the issue with the steel grid deck is that cyclists cannot comfortably ride, and one reason for the solid deck is that this is the only place for cyclists to cross the Piscataqua River in this area. The timber sidewalks would also be changed to concrete, and the steel deck will be filled.

Jim Garvin inquired whether a solid deck would permit better control of water through the deck. Nancy Mayville concurred with this and indicated that the new issue that arose in the public meeting is widening of the sidewalks to 8 feet. The costs and ramifications of this need to be examined; this would require a higher railing if bicycles are on the sidewalk.

Jim Garvin indicated that the State Historic Preservation Office was obtaining information on the preferred alternative for the first time. The other issue is costs, and comparative costs for the lift span replacement vs. lift span rehabilitation.

John Watters stated that current estimates indicate that the complete roadway closure would represent cost savings. The rehabilitation would involve construction costs of $33.6 million, for a total project cost of $38.8 million (when considering design and administrative costs). The new lift span would involve construction cost of $34.4 million, for a total project cost of $39.6 million. This represents a differential of $800,000 for initial costs alone, and does not account for increased maintenance costs. The new lift span would involve lower future maintenance costs. The existing bridge was built in 1921-22, and the steel framing absorbs chlorides that, with blast cleaning, cannot totally be removed, so the painting does not last as long. The built-up members of the existing bridge have more edges for moisture and pack rust to collect in and are difficult to seal. The life cycle cost analysis is being performed to calculate the differential painting costs. With the lift span rehabilitation, touch up painting would be required within 10 years. With the lift span replacement, painting should last for more than 20 years, so in 20 years touch up painting may be required and complete painting would be required in no less than 30 years, even in the harsh marine environment.

Jim Garvin inquired about the proportion of the surface area of the lift span to the older metal trusses that would remain in place for both the lift span and the adjacent trusses. John Watters indicated that it would cost approximately $6.7 million to paint the entire structure and approximately $2.5 million to paint the lift span, so these numbers should give some idea of the proportion of the lift span to the flanking steel trusses. Jim Garvin asked why the lift span would have greater deterioration above the deck than the two flanking spans.

Jim McConaha pointed out that, if the lift span is replaced, the rest of the bridge would have the same maintenance issues. He inquired whether the lift span is more deteriorated. John Watters indicated that the open grid deck allows deicing salts to eat away at the underlying steel, and entire portions of the roadway framing system need to be replaced. The members in the middle of the road for adjacent truss spans are in poorer shape, and the edges are in better shape.

Harry Kinter inquired whether, if the lift span were rehabilitated, the bridge deck and everything below the deck would need to be replaced. Would the replacement include the lower chords? He asked whether the rehabilitated lift span would be floated in. John Watters indicated that rehabilitation would be completed in place, but a new lift span would be constructed off site and floated in.

Harry Kinter pointed out that prudency issues would need to be clearly addressed in the Section 4(f) Evaluation. This discussion would include the benefit in time savings as well as other benefits of the replacement option.

John Watters indicated that, assuming a full road closure, the lift span rehabilitation could be performed in 5 months, while the lift span replacement could be accomplished in four months. The float-in, float-out of the lift span could conceivably be performed in as little as two days, although two weeks is carried in the schedule, and testing could take less than one week. He indicated that the critical construction activity becomes the Scott Avenue Bridge replacement.

Harry Kinter indicated that the long-term costs should be developed for the lift span rehabilitation vs. replacement. John Watters indicated that 5-year, 10-year, and 20-year life cycle costs are being developed.

Richard Candee inquired whether the cost of lift span rehabilitation off-site had been established John Watters indicated that this would involve taking the bridge out of service for a longer period of time, and this would also be cost-prohibitive, since float out has to be done twice. He indicated that the construction duration would also be more than 5 months, and the other issue is where the work could be done off site.

Jim Garvin indicated that the original bridge was built at the State Pier. He indicated that the other issue is Section 4(f). Under Section 106, the adverse effects should be avoided if possible. Replacing the original fabric of the bridge would be considered an adverse effect, and the National Historic Preservation Act does not favor the preferred alternative on this basis. He inquired about incorporation of Section 106 in the Environmental Study Report.

Harry Kinter indicated that the Environmental Study Report will address both Section 4(f) and Section 106. He stated that, for the option, which doesn't take the bridge (lift span rehabilitation), there is no question of feasibility. He stated that NHDOT will need to make a case for why the rehabilitation is not prudent, a difficult argument.

Mark Richardson stated that the designers are well aware of the historical issues and historical fabric of the bridge, and that it is not the intent to destroy, but to replicate the appearance of the bridge as much as can reasonably be achieved. He stated that one concern is the connection points on the truss panels. New plates were installed on these that sandwich the corrosion in between, and he is concerned with long-term encapsulation of this corrosion, since it is difficult to inspect the actual condition at these points. It will continue to corrode at these points. The plates were installed in 2004 as the only practical method to strengthen the truss until the currently proposed larger project could be developed. He stated that the contingency and costs could escalate for rehabilitation and the timeframe for construction within 5 months could be extended, if more section loss is found during construction on the bridge. Fabrication off-site of materials that had not been planned would create delays. Significant stabilizing of the truss would be required to disassemble new pieces. Due to the nature of a truss bridge and how the steel members frame together, it is difficult (if not impossible) to replace some members without compromising the structural stability of the bridge. With the partial, alternating one-way traffic phasing, there was a concern that this option could increase the likelihood of delay into the winter. He sees the same potential for delay during rehabilitation of the lift span. Replacement of the lift span would also provide a real benefit for reduced future bridge maintenance.

Harry Kinter indicated that this should all be part of the prudency discussion. Mark Richardson indicated that, collectively, the concept for rehabilitation was deemed acceptable, but because of the corrosion uncertainty, the NHDOT didn't want to leave the bridge in this deteriorated condition. In response, Jim Garvin stated that it seemed as if the lift span rehabilitation option had been foreclosed, and he had assumed that the rehabilitation below the deck would bring the bridge to a like new condition. He had assumed that the rehabilitated bridge would not have pack rust and that the joints would be reconstituted on the Memorial Bridge. He stated that, if this is not true, then a thorough rehabilitation is not proposed. The lift span rehabilitation costs should be reevaluated for comparison with the costs of the lift span replacement option. No retention of deteriorated members or patch plates with rust behind them was previously assumed by NH DHR to be part of the proposed rehabilitation. He noted that the cost of thorough rehabilitation should be worked into the final equation and the cost increase needed to completely rehabilitate the bridge determined.

John Watters estimated that 50% to 75% of the panel points have been corroded by pack rust, as described by Mark Richardson. He indicated that there is no way to restore the bridge to like new conditions, due to the infiltration of chlorides into the steel.

Jim McConaha inquired whether, when work begins on the bridge, and the lift span is removed, the lift span is kept in operating condition to allow vessels to pass underneath the operating lift span as they do today. John Watters indicated that the bridge would be lifted and locked in the up position for 2 months, when the trunnions, sheaves, and mechanical components would be replaced. After the 2 months, the bridge would have a greater ability to lift to accommodate navigational traffic, since the mechanical and electrical components will be new and in better operating condition than the existing bridge. The rehabilitation would be performed when the bridge is subject to lifts. Scaffolding would be built under the bridge to allow the bridge to be worked on between lifts, and the contractor would need to work around navigational closures. When a bridge lift would occur, the contractor would need to get off of the span and do a "lock out/tag out" when all materials are removed from the lift span, so they don't fall off. This is more of a concern than with the float out/float in of the lift span.

Jim Garvin indicated that staging for preferred alternative and staging for the rehabilitation procedure of the lift span should be spelled out. He indicated that the effects cannot be understood, with the current explanation. He inquired whether engineering approaches to the two scenarios could be better explained.

Nancy Mayville indicated that the questions should be put on the table, and the team would work on a document to address questions. The project team would be back one or two more times to discuss the preferred alternative and effects on cultural resources.

Jim McConaha commented that the appearance of concrete sidewalks is bland and plain and advocated the use of modern planking material to retain the appearance of the sidewalk. He stated that the pedestrian experience is part of the advantage of the timber sidewalk. Lynne Monroe commented that this is a matter of taste. John Watters indicated that composite resin was considered, but the framing system doesn't lend itself to use on the bridge. The boards are thinner and since the strips are 5 feet on center, they would sag and deform. He indicated that joints should be avoided, and this material would involve joints every 6 inches. John Watters indicated that there are ways of adding color and texture to improve the look of the sidewalk without a substantial increase in cost. The concrete can be designed to appear similar to a brick sidewalk. He indicated that this was a concern raised at the public meeting, to replicate the nautical feel of the bridge. John Watters indicated that the SHPOs and Portsmouth Historical Society would be consulted to come up with a better sidewalk appearance.

Harry Kinter inquired whether there would be pavement markings for bicycles. Nancy Mayville indicated that this would be added to the list of questions, but this would be a 14-foot shared lane and may be too narrow to safely stripe for bicycle use. This might mean an 11-foot travel lane and 3-foot shoulder for cyclists, but would put the bicyclists against the bridge truss in a confined space. Tom Jamieson indicated that segregating vehicles from a designated bike lane would provide a safer riding experience for cyclists. Richard Candee indicated that signage would help this situation.

Mike Johnson inquired whether support below the deck was the main problem. He inquired whether replacing the system below the deck would have the same result as replacing the entire lift span. John Watters indicated that most of the repairs would be performed under the deck. The conditions on upper portions of the bridge are not as severe as below the deck, but corrosion is there as well.

Joyce McKay indicated that, unless there are specific questions, the attendees would reconvene next month, and in the interim, formulate questions about the preferred alternative. She requested that they be submitted two weeks before the meeting on May 11.

Harry Kinter inquired about the status of the Environmental Study Report. Kevin Nyhan indicated that internal comments are due next Tuesday. Charlie Hood indicated that review is proceeding on sections that don't address Section 106 issues. Joyce McKay indicated that sections addressing Section 106 will need to be substantially reworked, pending the outcome of the ongoing Section 106 consultation process.

Harry Kinter stated that FHWA is interested in hearing views of consulting parties on the lift span replacement. Richard Candee indicated that the Portsmouth Historical Society strongly favored the lift span rehabilitation and is interested in the levels of deterioration above and below the deck and would like information on, and further explanation of, alternative nearby sites for float-in/float-out rehabilitation and the associated costs. He indicated that the all rolled steel system may look different from the existing bridge, and they have interest in the appearance of the design and engineering that might mitigate the effects of the lift span replacement. He indicated that they need to review the prudency issues. Carol Hooper noted that the timber sidewalks on the bridge are not the original sidewalks. Richard Candee inquired why replacing only the section below the deck was not feasible.

Jim Garvin requested information about a prudent way to remove and rehabilitate the lift span on dry land and the cost ramifications. He requested information on the loss of fabric on the bridge including the lift span and adjacent trusses and noted that there is a big adverse effect for replacing the lift span. He noted the need to quantify the different levels of adverse effect for the lift span rehabilitation and lift span replacement resulting from the replacement of the steel members. Additional information on what rehabilitation would include examination from two perspectives: rehabilitation by replication of all deteriorated components and rehabilitation as planned indicating which members would be replaced in both instances would aid an understanding of effect. An on-site and off-site rehabilitation should be addressed. Nancy Mayville indicated that this information would be provided in a month or two.

Lynne Monroe inquired whether the renderings accurately reflect the appearance of the new lift span, given the design variables involved. John Watters confirmed that the renderings are an accurate depiction of the proposed lift span replacement.

Jim Garvin inquired about a size increase in the steel members. John Watters indicated that the proposed members would be similar in size to the existing. He indicated that the picture accurately depicts the final product.

Linda Wilson inquired whether the lattice sections would be retained. John Watters indicated that lattice sections in Trusses 1 and 3 (flanking spans) will remain, but the lattice in the center lift span would be replaced by rolled members. Richard Candee requested documentation on how much of the lattice would be replaced for all of the spans and wanted to understand where the greatest deterioration existed.

Tom Jamieson noted that floating the deck section away for rehabilitation would incur a longer duration of impact on pedestrian and bicycle traffic. It was noted that traffic in communities would be affected for a longer period of time. Nancy Mayville indicated that a realistic approach is needed for time-efficient construction.

Harry Kinter inquired whether the contract is going to specify a construction staging area. Nancy Mayville indicated that NHDOT would allow the contractor to choose a staging area, since he needs to make sure that he can construct the project. Harry Kinter pointed out the need to have control over where and how the contractor works to prevent cultural resource impacts. Nancy Mayville indicated that, for the emergency repairs, the contractor leased the land under the bridge from the City of Portsmouth. She indicated that the NHDOT would make documents available to the contractor, referencing historical documents, and would allow them to make their arrangements for staging. The selected staging area would be reviewed for impacts to historic properties.

Joyce McKay concluded the meeting and noted that the next cultural resource meeting to discuss the Memorial Bridge Rehabilitation would be held on May 11, 2006.

****Memos:** Dover, X-A000(280), 14287; Hampton, X-A000(229), 14188

Submitted by Joyce McKay, Cultural Resources Manager

c.c.	J. Brillhart	K. Cota	N. Mayville	Bill Cass
	C. Barleon, OSP	C. Waszczuk	D. Lyford	
	V. Chase	R. Roach, ACOE	H. Kinter, FHWA	